

We Claim:

1. In an electronic device, a method for maintaining a timed-event list of operations to be performed by said electronic device, said method, comprising the steps of:
 - 5 providing a first data structure, said data structure of a size larger than the expected number of events occurring in said electronic device at any one time,
 - providing a plurality of second data structures referenced by said first data structure, said second data structures holding third structures, each said third structure encapsulating data about a timed event, said timed events to be performed by said
 - 10 electronic device,
 - inserting a third structure into a selected one of said second data structures referenced by said first data structure, said selected one of said second data structures selected based on the time for execution of a timed event encapsulated by said third structure, the size of said first data structure and a current time.
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2. The method of claim 1 comprising the further step of:
 - serially traversing said first data structure at periodic timed intervals.
3. The method of claim 2 comprising the further steps of:
 - 20 serially traversing a second data structure referenced by said first data structure in the time period between said periodic timed intervals; and
 - inspecting a third structure held by said second data structure.
4. The method of claim 3 comprising the additional steps of:
 - 25 retrieving said inspected third structure from said second data structure; and
 - executing a timed event encapsulated by said third structure.
5. The method of claim 3 comprising the further steps of:
 - removing said inspected third structure from said second data structure; and
 - 30 inserting said inspected third structure into a different second data structure referenced by said first data structure based on the time for execution of a timed event encapsulated by said third structure, the size of said first data structure and a current time.

6. The method of claim 5 comprising the further steps of:
retrieving said inspected third structure from said second data structure; and
executing a timed event encapsulated by said third structure.
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7. The method of claim 3 wherein said first data structure is an array.
8. The method of claim 3 wherein said plurality of said second data structures are linked lists.
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9. The method of claim 3 wherein said plurality of said second data structure are doubly-linked lists.
10. The method of claim 3 wherein said third structure encapsulates data about a timed event that is part of a computer simulation.
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11. The method of claim 1 wherein said electronic device is a real-time computer system.
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12. The method of claim 1 wherein said electronic device is a network switch.
13. The method of claim 1 wherein a hashing algorithm is used to select the insertion point of said third structure.
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14. In a computer system, a method for maintaining a timed-event list, said method, comprising the steps of:
providing an array of memory locations, said memory locations numbering more than the expected number of events occurring in said computer system at any one time,
providing a plurality of linked lists referenced by said memory locations in said
30 array, said linked lists including nodes, each said node encapsulating data about a timed event to be performed by said computer system;
inserting a node into a selected one of said linked lists referenced by said
memory locations in said array, said selected one of said linked lists selected based on the time for execution of a timed event encapsulated in said node, the size of said array
35 and a current time.

15. The method of claim 14 wherein said linked lists are doubly-linked lists.
16. The method of claim 14 comprising the further step of:
5 serially traversing said array at periodic timed intervals.
17. The method of claim 16 comprising the further steps of:
 serially traversing a linked list referenced by said memory locations in said
array; and
10 inspecting a node in said linked list encapsulating data about a timed event.
18. The method of claim 17 comprising the further steps of:
 retrieving said inspected node from said linked list; and
 executing a timed event encapsulated by said inspected node.
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19. The method of claim 17 comprising the further steps of:
 removing said inspected node from said linked list; and
 inserting said inspected node into into a different linked list referenced by a
different memory location in said array based on the time for execution of a timed event
20 encapsulated by said inspected node, the size of said first data structure and a current
time.
20. The method of claim 19 comprising the further steps of:
 retrieving said inspected node from said different linked list; and
25 executing a timed event encapsulated by said inspected node.
21. The method of claim 14 wherein said computer system is a real-time system.
22. The method of claim 14 wherein said timed event list holds events for a computer
30 simulation.
23. In a system, a medium holding computer-executable instructions for a method, said
method, comprising the steps of:
 providing a first data structure, said data structure of a size larger than the
35 expected number of events occurring in said system at any one time,

providing a plurality of second data structures referenced by said first data structure, said second data structures holding third structures, each said third structure encapsulating data about a timed event, said timed events to be performed by said system,

- 5 inserting a third structure into a selected one of said second data structures referenced by said first data structure, said selected one of said second data structures selected based on the time for execution of a timed event encapsulated by said third structure, the size of said first data structure and the current time.

- 10 24. The method of claim 23 comprising the further step of:
 serially traversing said first data structure at periodic timed intervals.

25. The method of claim 24 comprising the further steps of:
 serially traversing a second data structure referenced by said first data structure
15 in the time period between said periodic timed intervals; and
 inspecting a third structure in said second data structure, said third structure encapsulating information about a timed event.

26. The method of claim 25 comprising the additional steps of:
20 retrieving said inspected third structure from said second data structure; and
 executing a timed event encapsulated by said third structure.

27. The method of claim 25 comprising the further steps of:
 removing said inspected third structure from said second data structure; and
25 inserting said inspected third structure into a different second data structure referenced by said first data structure based on the time for execution of a timed event encapsulated by said third structure, the size of said first data structure and the current time.

- 30 28. The method of claim 27 comprising the further steps of:
 retrieving said third structure from said second data structure; and
 executing a timed event encapsulated by said third structure.

29. In an optical network, a switching apparatus comprising:
- a processor;
 - an event list, said event list comprised of a first data structure holding references
 - 5 to a plurality of second data structures, said second data structures holding third structures, said third structures encapsulating information about events scheduled to be executed by said switching apparatus; and
 - a management facility for maintaining said event list, said management facility inserting third structures into selected second data structures referenced by said first data
 - 10 structures based on the time for execution of a timed event encapsulated by said third structure, the size of said first data structure and a current time.
30. The apparatus of claim 29 wherein said first data structure is an array
- 15 31. The apparatus of claim 29 wherein said second data structure is a linked list.
32. The apparatus of claim 29 wherein said second data structure is a doubly-linked list.